ZENITH data systems

HEATH

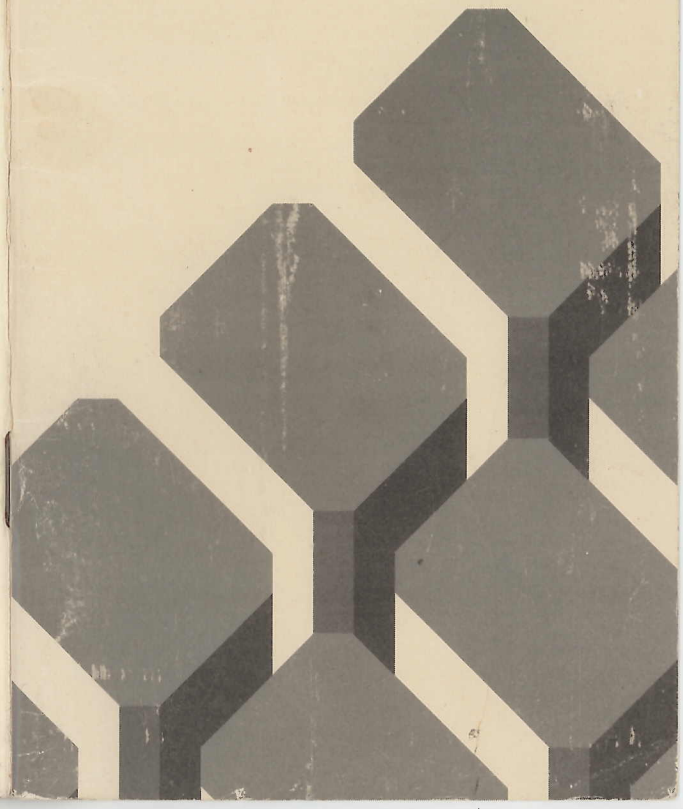
THE QUALITY GOES IN BEFORE THE NAME GOES ON

PERSONAL COMPUTER SYSTEMS

MICROSOFT™

MS™-DOS VERSION 2

QUICK REFERENCE GUIDE



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Entry Form Notation

The MS-DOS command lines and data entries use symbols to describe the proper order, or syntax, of command lines. These symbols also show what parts of a command line are required, optional, names, variables, or defaults.

CAPITALS	Denote key names* and required entries.
Boldface	Indicate terms the user is to enter or type in.
lc italic	Lowercase italics indicates user-defined variables.
UC ITALIC	Uppercase italics indicates a key name* in a command line.
[ ]	Brackets indicate that the character or word is optional.
...	Ellipsis means that a character or word to the left of the symbol may be repeated up to the limit shown on the right of the symbol.

* Adjacent key names separated by a hyphen indicate that the first key(s) must be held down while the last key is pressed.

Some lowercase italic variables are symbols that represent the following:

afn	Ambiguous file name
d:	Drive name or destination drive name
p	Winchester disk partition
s:	Source drive name
u:	Unit number
/x	Switch

All punctuation except square brackets or ellipses must be included where shown. This includes commas, equal signs, question marks, colons, slashes, and backslashes.

At the end of each command line entry, press the **RETURN** key.

Primary Commands

Transient commands are located in an executable file that is recorded on disk. Resident commands are located in the operating system itself.

APPLY

(Transient) Executes a command with substitution.

```
APPLY [d:]filespec "command"
APPLY [d:]pathname "command"
APPLY [-] "command"
APPLY "command" [d:]filename
APPLY "command" [d:]pathname
APPLY "command" [-]
```

ASSIGN

(Transient) Assigns Winchester partition to logical drive letter.

```
ASSIGN[ ?]
ASSIGN u:
ASSIGN u:p d:
```

BACKUP

(Transient) File archiver—creates backup file.

```
BACKUP
BACKUP ?
BACKUP [filespec[+filespec...]] [d:][filename][/x...]
```

The */x* represents one or more of the following switches:

/A After date. /A:*mm-dd-yy*
/B Before date. /B:*mm-dd-yy*
/D Directory master.
/E Exception files. /E:*filespec...*
/F Format silent (default is off).
/G Global subdirectories.
/L List directory. *filespec*/L
/N No formatting.
/Q Query each (default is off).
/R Review selected files.
/T Today's date.
/V Verify files (default is off).
/W Written files only.

BREAK

(Resident) Sets check for CTRL-BREAK or CTRL-C.

```
BREAK [ON]
BREAK [OFF]
```

CHDIR or CD

(Resident) Displays or changes current directory.

```
CHDIR [d:][pathname]
CD [d:][pathname]
```

CHKDSK

(Transient) Provides status of disk contents.

```
CHKDSK [d:][filename][/x]
```

The */x* represents one of the following switches:

/F Fix errors.
/V Display messages.

CIPHER

(Transient) Encrypts and decrypts files.

```
CIPHER keyword >filespec
CIPHER keyword <filespec
CIPHER keyword <filspec1 >filspec2
```

CLS

(Resident) Clears the screen.

```
CLS
```

COMMAND

(Transient) Makes EXEC calls on resident commands.

COMMAND [*d:*] [*pathname*] [*cttydev*] [*/x*]

The */x* represents one of the following switches:

/D No initial prompting for date and time.
/P Make COMMAND.COM permanent in memory.
/C*string* Execute *string*, then exit.

COMP

(Transient) Compares files.

COMP?
COMP [*filespc1* [*filespc2*]]

CONFIGUR

(Transient) Configures MS-DOS for your hardware.

CONFIGUR

COPY

(Resident) Copies file(s) specified.

COPY *filespec* [*d:*] [/V]
COPY *filespec* [*d:*]*filename* [/V]
COPY *filespec* [*d:*]*pathname* [/V]
COPY [*d:*]*pathname* [*d:*] [*pathname*] [/V]

The /V switch causes verification.
The /A = ASCII file transfer
The /B = binary file transfer

CTTY

(Resident) Changes device from which commands are issued.

CTTY *device*

device can be any one of the following device names or the name of a user installed Device Driver:

AUX — an auxiliary device
COM1 — a device connected to serial port number 1
COM2 — a device connected to serial port number 2
CON — console (input from keyboard and output to screen)

DATE

(Resident) Displays and sets the date.

DATE
DATE *mm-dd-yy*

DEL or ERASE

(Resident) Deletes file(s) specified.

DEL *filespec*
DEL [*d:*]*pathname*[*filename*]
ERASE *filespec*
ERASE [*d:*]*pathname*[*filename*]

DIR

(Resident) Lists requested directory entries.

DIR [*d:*] [*filename*] [*/x*]
DIR [*d:*] [*pathname*] [*/x*]

The */x* represents one or both of the following switches:

/P Page mode.
/W Wide Display mode.

DISKCOMP

(Transient) Compares disks.

DISKCOMP [*s:*[*d:*]]

DISKCOPY

(Transient) Copies disks.

DISKCOPY [*s*: [*d*:]] [/V]

The /V switch causes verification.

ECHO

(Resident, Batch-Processing) Controls echo feature.

ECHO [ON]
ECHO [OFF]
ECHO [*message*]

EXIT

(Resident) Exits COMMAND.COM and returns to previous level.

EXIT

FC

(Transient) Lists differences between specified files.

FC *filename1 filename2*[/*x*]

The /*x* represents one or more of the following switches:

/n	Number of lines required to match (from 1 to 9, default is 3) for files to be considered matching after finding a difference.
/B	Binary comparison of both files.
/C	Ignore letter case.
/W	Compress tabs and spaces during comparison.

FIND

(Transient) Searches for constant string of text.

FIND "*string*" [*filespec...*] [/*x*]

The /x represents one or more of the following switches:

/C	Count lines (display only the total number of lines that contained a match in each specified file).
/I	Ignore letter case (ignore upper- and lowercase distinction in executing the search function).
/N	Number lines (precede each displayed line with its relative line number within the file).
/V	Variant lines (display all lines from the specified file or files that do *not* contain the specified string).

FOR

(Resident) Batch and interactive command extension.

FOR *%variable* IN (*set*) DO *command*
FOR *%%variable* IN (*set*) DO *command*

FORMAT

(Transient) Formats a disk to receive MS-DOS files.

FORMAT [*d*:] [/*x* ...]

The /*x* represents one or more of the following switches:

/C	Does *not* initialize the disk, but rather clears the directory and file allocation tables.
/M	Initializes the disk as a single-sided disk.
/N	Suppresses the onscreen prompts (useful when FORMAT is used in a batch file).
/S	Copies the system files from the disk in the default drive to the newly formatted disk.
/V	Checks the disk after formatting to verify that it was formatted correctly.
/8	Use the old disk format (eight sectors per track).

GOTO

(Resident, Batch-Processing) Branch out of execution.

GOTO *label*

IF

(Resident) Allows conditional execution.

IF[NOT] *condition command*

MAP

(Transient) Temporarily reassigns logical drive names.

```
MAP ?
MAP [x=y [ . . .]]
```

MKDIR or MD

(Resident) Makes a new directory.

```
MKDIR [d:]pathname
MD [d:]pathname
```

MODE

(Transient) Configures MS-DOS for your hardware.

```
MODE ?
MODE LPT#: [n] [, [m] [,P]]
MODE [n] [, [m] [, [T]] [,s]]
MODE COMn: baud[, [parity] [, [databits] [, [stopbits] [,P]]]]
MODE LPT#: =COMn
```

MORE

(Transient) Displays output one screen at a time.

```
MORE
command | MORE
```

PATH

(Resident) Specify directories to be searched for transient commands.

```
PATH [d:] [pathname[; [d:]pathname]...]
```

PAUSE

(Resident) Suspend execution.

```
PAUSE [remark]
```


PRINT

(Transient) Prints hardcopy of ASCII files.

```
PRINT
PRINT filespec[/x] [filespec[/x]...]
```

The */x* represents one or more of the following switches:

/A	Abort print (cancels the specified file and all following file specifications, until an /S switch is encountered, from the print queue).
/C*n*	Copies (causes PRINT to produce *n* copies of the specified file; *n* may be any value from 1 to 255, inclusive).
/F	Form feed (causes PRINT to issue a form feed at the end of each copy of the specified file).
/L*n*	Left margin (sets the left margin for the specified file at the *n*th column).
/P*n*	Page length (sets page length for the specified file at *n* lines, *n* may be any integer).
/R*n*	Right margin (sets the right margin for the specified file at the *n*th column, *n* may be any value within the printer limitations).
/S	Spool print on (adds the specified file and all following file specifications, until an /A switch is encountered, to the print queue).
/T	Terminate (terminates the PRINT function by eliminating all files from the print queue).

PROMPT

(Resident) Designates MS-DOS system prompt.

```
PROMPT [$] [prompttext]
```

PSC *printername*

(Transient) Outputs all graphic and special characters to printer.

```
PSC printername
```

The ***printername*** represents one of the following graphic printers:

IDS	IDS Prism Printer.
MPI	MPI Printer.
MX80	Epson MX-80 with graphics option.
OKI	OKIDATA Printer.
P920	Printek 920.
TS315	Transtar 315 color.

RDCPM

(Transient) Copies CP/M files.

```
RDCPM
RDCPM ?
RDCPM DIR d: [filename] [/Z]
RDCPM [s:] sorcfile[d:] [destfile] [/Z]
```

The /Z switch causes Zenith format CP/M disks to be read/copied.

RECOVER

(Transient) Recovers file or files specified.

```
RECOVER d:
RECOVER filespec
```

REM

(Resident) Displays a batch file comment.

```
REM [remark]
 . [remark]
```

REN or RENAME

(Resident) Renames first file as second file.

```
REN filespec filename
RENAME filespec filename
```

RESTORE

(Transient) Restores archived files.

```
RESTORE
RESTORE ?
RESTORE [[d:]filename [filespec[+filespec...]]] [/x...]
```


The */x* represents one or more of the following switches:

/A After date. **/A:*mm-dd-yy***
/B Before date. **/B:*mm-dd-yy***
/D Directory master.
/E Exception file. **/E:*filespec...***
/F Flat restoration.
/L List directory. ***filespec*/L**
/M Map output drive. **/M:*lp***
/O Overwrite files (default is off).
/Q Query each (default is off).
/R Review selected files.
/T Today's date.
/V Verify files (default is off).

RMDIR or RD

(Resident) Removes a directory.

```
RMDIR [d:]pathname
RD [d:]pathname
```

SEARCH

(Transient) Locates files within directory structure.

```
SEARCH[ afn] [/x]
```

The *x* represents one or more of the following switches:

/C Do *not* search sub-directories.
/D List names of directories while searching.
/T Display a graphic representation of the directory structure.

SET

(Resident) Sets one string value equivalent to another.

```
SET
SET [string1=string2]
```

SHIFT

(Resident, Batch-Processing) Allows use of over 10 replaceable parameters.

```
SHIFT
```

SORT

(Transient) Sorts data alphabetically or numerically.

SORT [/*x*]

The */x* represents one of the following switches:

/R	Reverse sort (sort from Z to A rather than from A to Z, or in descending rather than ascending numeric order).
/+*n*	Start sort at column *n* (where *n* is a user-specified integer).

SYS

(Transient) Transfers system files IO.SYS and MSDOS.SYS to specified drive.

SYS *d*:

TIME

(Resident) Displays and sets the time.

TIME
TIME *hh*[:*mm*[:*ss*[.*cc*]]]

TREE

(Transient) Displays subdirectory paths on a disk.

TREE ?
TREE [*d*:][/F]

The /F switch causes TREE to list the files contained in each subdirectory.

TYPE

(Resident) Displays the contents of the ASCII file specified.

TYPE *filespec*
TYPE [*d*:][*pathname*]*filename*

VER

(Resident) Displays MSDOS.SYS and IO.SYS version numbers.

VER

VERIFY

(Resident) Verifies data is correctly written to disk.

VERIFY [ON]
VERIFY [OFF]

VOL

(Resident) Displays disk volume label.

VOL [*d*:]

Winchester Commands

PREP

PREP initializes a Winchester disk so that it is ready for use as a mass storage device. PREP is seldom (if ever) used.

CAUTION: Using PREP will destroy all software and/or data stored on your Winchester disk. Do not use PREP until you have transferred your Winchester disk files to floppy disks.

After using the PREP utility, reset and reboot the system with a bootable floppy disk.

PART

PART is run whenever you intend to change the arrangement of partitions on the Winchester disk. Additionally, PART permits you to select a default boot partition, as well as to change the disk space allocated to each partition.

CAUTION: Using PART can destroy all software and/or data stored on your Winchester disk. Do not use PART until you have transferred your Winchester disk files to floppy disks.

SHIP

SHIP is run whenever you intend to physically move the Winchester disk. SHIP moves the read/write heads of a Winchester disk to a position where they cannot destroy stored data in the event of excessive physical shock during transit.

NOTE: The Winchester controller card causes the read/write heads to move to cylinder zero the first time you access the Winchester disk after power up. Thus, the head positioning caused by SHIP will remain in effect only until you turn the disk on again and access it.

DETECT

DETECT examines a Winchester partition and isolates unusable sectors so that they will not be accessed by MS-DOS. DETECT adds the addresses of these bad sectors to a list of bad sectors (bad sector table) that was recorded on the Winchester disk when PREP was run.

Program Development Commands

EDLIN

EDLIN ***filespec***

EDLIN enables you to create, display, and edit source program and text files. EDLIN is called a *line editor*; that is, the text in files created or edited by EDLIN is divided into lines, each of which may be up to 253 characters in length.

Interline Commands

Append Lines	**[***n***]A**
Delete Lines	**[***line1***] [,***line2***]D**
Edit Line	***line***
End Edit	**E**
Insert Line	***line*****I**
List Lines	**[***line1***] [,***line2***]L**
Quit Edit	**Q**
Replace Text	**[***line1***] [,***line2***] [?]R[***string1***]F6[***string2***]**
Search Lines	**[***line1***] [,***line2***] [?]S[***string***]**
Write Lines	**[***n***]W**

Intraline Editing Functions

Key Name	Function Name	Description
F1 or →	COPY1	Copies one character.
F2*x*	COPYUP	Copies multiple characters, up to specified character *x*.
F3	COPYALL	Copies all characters.
DEL	SKIP1	Skips (does not copy) one character.
F4*x*	SKIPUP	Skips (does not copy) multiple characters, up to the specified character *x*.
ESC	QUIT INPUT or VOID	Voids the current input.
INS	INSERT	Invokes insert mode.*
F5	NEW TEMPLATE	Creates new template.

* The INS key is a toggle. Press the INS key once and the insert mode is on, press again and the insert mode is off. The insert mode also can be turned off automatically by some of the other functions.

LIB

LIB
LIB ***library operations*, [*listing*]**
LIB ***@filespec***

LIB deletes modules from a library file, changes library modules into object files, and appends object files to a library file.

Command Character	Action
+	Append an object file as the last module.
−	Delete a module from the library.
*	Extract a module and place it in an object file.
;	Use default responses to remaining prompts.
&	Extend current physical line; repeat command prompt.
CTRL-BREAK	Abort library session.

LINK

Combine several object modules into one relocatable load module, or run file.

LINK
LINK ***object-list*,*runfile*,*listfile*,*lib-list*[/*x*]**
LINK ***@filespec***

The */x* represents any one of the following optional switches:

/DSALLOCATE	Load data at high end of data segment. Required for Pascal and FORTRAN programs.
/HIGH	Place run file as high as possible in memory. Do not use with Pascal or FORTRAN programs.
/LINENUMBER	Include line numbers in list file.
/MAP	List all global symbols with definitions.
/PAUSE	Temporarily halt linker session. Press the RETURN key to resume.
/STACK:*number*	Set fixed stack size to *number* in run file.
/NO	No default library search.

Command Character	Action
+	Separate entries or extend the current physical line.
;	Select default responses to the remaining prompts.
CTRL-BREAK	Abort the link session.

DEBUG

DEBUG[***filespec***[***arglist***]]

DEBUG provides a controlled testing environment for isolating and eliminating errors in, or malfunctions of, binary and executable object files.

It allows you to alter the contents of a file or the contents of a CPU register and then to immediately reexecute a program to check on the validity of the changes.

Function Name	Function Syntax
Assemble	**A**[***address***]
Compare	**C*range address***
Dump	**D**[***address***][**L*value***]
	D[***range***]
Enter	**E*address***[***list***]
Fill	**F*range list***
Go	**G**[=***address1***][***address2...***]
Hex	**H*address address***
Input	**I*value***
Load	**L**[***address***[***drive record record***]]
Move	**M*range address***
Name	**N*filespec***[***filespec...***]
Output	**O*value byte***
Quit	**Q**
Register	**R**[***register***]
Search	**S*range list***
Trace	**T**[=***address***][***value***]
Unassemble	**U**[***address***][**L** ***value***]
	U[***range***]
Write	**W**[***address***[***drive record record***]]

Bootup Features

B[*disk*] [*unit*] [:*partition*]

B	Required input that begins the bootup sequence.
disk	Disk to be booted, either F (floppy) or W (Winchester).
unit	Drive number (0 through 7) to be booted from.
:partition	Partition of the Winchester to boot (1, 2, 3, or 4).
CTRL-BREAK	Exits to the MFM-150 monitor prompt (after an error message has been displayed).
CTRL-ALT-INS	Exits to the monitor prompt but retains all default bootup parameters.
CTRL-ALT-DEL	Resets the system; performs an automatic bootup if the hardware switches are set.

Command Entry

[*d*:]*function* [*argument*] *RETURN*

***d*:**	Name of the drive containing a transient command file.
function	Name of a resident or transient command, or a batch file.
argument	Entry that regulates the way in which the command operates.
RETURN	Entry that informs the system to execute the command.

Function Keys

KEY	FUNCTION	DESCRIPTION
F1 or →	COPY1	Copies one character.
F2*x*	COPYUP	Copies multiple characters up to the specified character, *x*.
F3	COPYALL	Copies all characters in the buffer.
DEL	SKIP1	Skips (does not copy) one character.
F4*x*	SKIPUP	Skips (does not copy) multiple characters up to the specified character, *x*.
ESC	QUIT INPUT or VOID	Voids the current input without affecting the template.
INS	INSERT	Invokes the insert mode. (The INS key is a toggle—toggle ON/OFF.)
F5	NEW TEMPLATE	Creates a new template.
F6	CTRL-Z	Puts a CTRL-Z (1AH) end of file character in the new template.

Control Entries

CONTROL CHARACTER	DESCRIPTION
ALT-BREAK	Flushes all data from the keyboard buffer.
CTRL-BREAK	Aborts current command immediately.
CTRL-C	Aborts current command as soon as any preceding entries in the buffer are executed.
CTRL-H	Removes last character from command line and erases character from the terminal screen.
CTRL-RETURN	Inserts physical end-of-line, but does not empty command line. Press CTRL-RETURN to extend the current logical line beyond the limits of one physical line (80 characters).
CTRL-P	Toggles echoing of output to the line printer.
CTRL-NUMLCK	Suspends output display on terminal screen. Press any key to resume.
CTRL-PRTSC	Copies terminal output to line printer.
SHIFT-PRTSC	Outputs to the printer everything on your screen.
CTRL-ALT-DEL	Reset the system.
CTRL-ALT-INS	Exit to the monitor prompt, retaining default parameters.

Batch Commands

[*d*:] *filename* [*parameters*]

Although all resident and transient commands can be included in batch files, the main purpose for the following resident commands is to be included in batch files:

ECHO	GOTO	PAUSE	SHIFT
FOR	IF	REM	

Replaceable parameters (%0 through %9) are used within a batch file as "dummy" parameters which will be replaced sequentially with real values from the batch command line when the batch file is executed.

NOTE: The replaceable parameter '%0' is always replaced by the drive name (if specified), and the file name of the batch file. This allows for the creation of batch file commands that can be used on more than just one set of files, or can be used to *restart* themselves.

Although you may only use up to ten replaceable parameters within a batch file (%0 through %9), you can overcome this limitation by using the SHIFT command. The SHIFT command shifts the parameters to the left, one parameter at a time.

Directory Structure

File Name Form

The entry form for a file name is *primname.ext*. The primary file name (*primname*) consists of one to eight characters and is required. The extension (*ext*) consists of one to three characters and is optional. The primary name and extension must be separated by a period (.).

Valid characters

A-Z	0-9	$	&	#	%
'	(	)	–	@	^
{	}	~	`	!	

Invalid characters

?	.	,	;	:	=
*	/	\	+	"	<
>					

File Specification

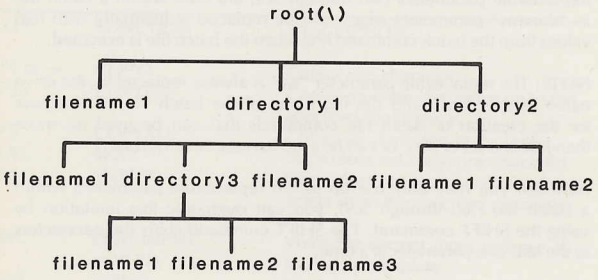
d:*primname*
d:*primname.ext*
d:*pathname**primname.ext*

Hierarchical Structure

MS-DOS has a multilevel structure of directories and files, with a top-to-bottom order of precedence.

The root directory is the directory that contains the names of one or more other directories.

A TYPICAL DIRECTORY STRUCTURE



Special File Names

. (dot) refers to the current working directory.
.. (dot dot) refers to the parent directory.

Path Name

[\] [*directory*] [*directory*...] [*filename*]

where [\] instructs MS-DOS to begin following the path from the root directory;
directory is any subdirectory in the system; and
filename is any valid file name for a disk file, including an optional file name extension.

NOTE: For all commands used in directory manipulation, the last entry in a path name must be a directory, not a file name. Also, the full path name of the current working directory cannot exceed 64 characters (not including *d*:\).

I/O Features

Valid Device Names

CON	Console (keyboard and screen)
PRN	Parallel printer #1
LPT1	Parallel printer #1
LPT2	Parallel printer #2
LPT3	Parallel printer #3
AUX	Serial port #1
COM1	Serial port #1
COM2	Serial port #2
CLOCK$	Clock device

NOTE: Device names cannot be used as file names.

Redirection Characters

command | *filter*

filter <*sorsfile* >*destfile*

>	Send information to specified file—overwrite if file already exists.
>>	Append output to the end of the specified file.
<	Take input for command from specified file.
|	Pipe the information from one program to another. (The output generated on the left side of the style bar is sent to the right side of the style bar for processing.)

Loadable Device Drivers

MDISK.DVD and ANSI.SYS are two functional examples of user-loadable device drivers that are provided on your MS-DOS version 2 distribution disks. ANSI and MDISK are *not* commands or utilities that are invoked at the system prompt; however, they may be loaded and used by user option.

ANSI.SYS (Terminal Driver)

ANSI.SYS is a functional character device driver that enables you to use special character sequences (escape codes) in your programs to control cursor positioning in screen displays and to redefine the function or meaning of any key in the keyboard. Essentially, ANSI.SYS provides ANSI terminal emulation.

To load (install) the ANSI driver, you must include a command line in the following form in a CONFIG.SYS file in the root directory:

```
DEVICE=ANSI.SYS
```

Once you have done this, ANSI.SYS will be loaded into memory whenever you boot up your system.

MDISK.DVD (Ram-Disk Driver)

MDISK.DVD is a fully-functional block device driver that enables the system to use machine memory in the same way that floppy disk or Winchester disk storage media is used. While a RAM-disk does not provide permanent storage like disk media (RAM is cleared when you reset or reboot your system), it offers the advantage of much faster access time and thus speeds system operation.

To load (install) the MDISK driver, you must include a command line in the following form in a CONFIG.SYS file in the root directory.

```
DEVICE=MDISK.DVD [SIZE=nnn] [START=xxxx]
```